which the descriptions left unsettled, and which could only be settled by the most careful structural study and the comparison of the types, involving a trip to Europe.

Conclusion.

I have thus touched, gentlemen, upon a few of the many subjects that crowd upon the mind for consideration on an occasion like this, — a few gleanings from a field which is passing rich in promise and possibility. It is a field that some of us have cultivated for many years, and yet have only scratched the surface ; and, if I have ventured to suggest or admonish, it is with the feeling that my own labors in this field are ere long about to end, and that I may not have another occasion. At no time in the history of the world has there, I trow, been gathered together such a body of devoted and capable workers in applied entomology. It marks an era in our calling, and, looking back at the progress of the past fifteen years, we may well ponder the possibilities of the next fifteen. They will be fruitful of grand results in proportion as we persistently and combinedly pursue the yet unsolved problems, and are not tempted to the immediate presentation of separate facts, which are so innumerable and so easily observed that their very wealth becomes an element of weakness. Epoch-making discoveries result only from this power of following up unswervingly any given problem or any fixed ideal. The kerosene emulsion ; the cyclone nozzle ; the history of *Phylloxera vastatrix*, of *Phorodon humuli*, of *Vedalia cardinalis*. — are illustrations in point : and, while we may not expect frequent results as striking or of as wide application as these, there is no end of important problems yet to be solved, and from the solution of which we may look for similar beneficial results. Applied entomology is often considered a sordid pursuit ; but it only becomes so when the object is sordid. When pursued with unselfish enthusiasm born of the love of investigation and the delight in benefiting our fellow-men, it is inspiring ; and there are few pursuits more deservedly so, considering the vast losses to our farmers from insect injury and the pressing need that the distressed husbandman has for every aid that can be given him. Our work is elevating in its sympathies for the struggles and sufferings of others. Our standard should be high, — the pursuit of knowledge for the advancement of agriculture. No official entomologist should lower it by sordid aims.

During the recent political campaign the farmer must have been sorely puzzled to know whether his interests needed protection or not. On the abstract question of tariff protection to his products, we, as entomologists, may no more agree than do the politicians, or than does the farmer himself ; but ours is a case of protection from injurious insects, and upon that there can nowhere be division of opinion. It is our duty to see that he gets it with as little tax for the means as possible. Gentlemen, I thank you.

NOTES AND NEWS.

A SERIES of experiments upon the synthetical production of cyanogen compounds by the mutual action of charcoal, gaseous nitrogen, and alkaline oxides or carbonates, at high temperatures and under great pressure, are described by Professor Hempel in the *Berichte*, and quoted im *Nature* of Dec. 18. Bunsen and Playfair long ago showed, that, when charcoal and potassium carbonate are heated to redness in an atmosphere of nitrogen, a certain quantity of cyanide of potassium is formed. Since that time Margueritte and Sourdeval have further shown that barium carbonate may be used in place of the potash, and that the barium cyanide produced may be again decomposed by steam into ammonia and barium carbonate. These re-actions afforded a theoretically continuous process for the conversion of atmospheric nitrogen into ammonia,— a process which, if it could only be worked on the large scale, would doubtless be of immense value. Unfortunately, however, only small proportions of the substances appear to enter into the re-action at ordinary pressures : hence the yield is not sufficiently large to render the process economical. Professor Hempel, however, by means of a simple pressure apparatus, has shown that the re-action is very much more complete, and, when potash is used, very energetic, under the pressure of sixty atmospheres. His apparatus consists of a strong cylinder closed at one end, and worked out of a single block of steel. The steel top screws tightly down, so as to form a closed chamber, and is pierced with two apertures,— one for connection with the compressing-pumps, and a second to admit the passage of an insulated copper rod. Within the steel cylinder is placed a smaller cylinder of porcelain, in which the mixture of the alkaline oxide or carbonate and charcoal is placed. Through the centre of this mixture passes a rod of charcoal, which is connected above with the copper rod, and below with the steel cylinder itself, in such a manner, that, when the wires from a strong battery or dynamo are connected with the projecting end of the copper rod and the exterior of the steel cylinder respectively, the rod of charcoal becomes heated to redness. The pumps are then caused to force in nitrogen gas until the desired pressure is registered on the gauge. Experimenting in this manner, it was found that the amount of barium cyanide formed in fifteen minutes under a pressure of sixty atmospheres was nearly four times that formed at ordinary atmospheric pressure, while in case of potassium carbonate the re-action was so energetic that in a few seconds the heated carbon rod itself was dissolved : hence it is evident that the formation of cyanides by heating together alkaline carbonates and charcoal in an atmosphere of nitrogen is greatly accelerated by largely increasing the pressure under which the re-action occurs.

— A well-attended meeting for the inauguration of an American Morphological Society was held in the Massachusetts Institute of Technology, Boston, on Dec. 29 and 30, 1890. Officers for the meeting were elected as follows: president, Professor E. B. Wilson; secretary and treasurer, Dr. I. Playfair McMurrich; executive committee, Professor E. L. Mark, Professor C. S. Minot, and Dr. E. A. Andrews. After the details of the organization had been completed, the following papers were read and discussed: "On the Development of the Scyphomedusæ," by I. Playfair McMurrich; "On the Intercalation of Vertebræ," by G. Baur; "The Heliotropism of Hydra, a Study in Natural Selection," by E. B. Wilson; "The Early Stages of the Development of the Lobster," by H. C. Bumpus; "Some Characteristics of the Primitive Vertebrate Brain," by H. F. Osborn; "The Development of Nereis and the Mesoblast Question," by E. B. Wilson; "The Præ-oral Organ of Xiphidium," by W. M. Wheeler; "A Review of the Cretaceous Mammalia," by H. F. Osborn; "Spermatophores as a Means of Indirect Impregnation," by C. O. Whitman; "The Phylogeny of the Actinozoa," by I. Playfair McMurrich. The following are the officers of the society for the ensuing year: president, Professor C. O. Whitman; vice-president, Professor E. L. Mark; secretary and treasurer, Dr. I. Playfair McMurrich; executive committee, the officers of the society, Professor E. B. Wilson, and Professor H. F. Osborn.

— "Iron Smelting by Modern Methods" will be the subject of the February article in the American Industries Series now running in *The Popular Science Monthly*. Every man who wishes to understand the progress of the great industries that have made the wealth and prosperity of the United States should read this series. Col. Garrick Mallery will contribute an article on "Greeting by Gesture," in which he describes many curious salutations, such as stroking one another's heads and bodies, rubbing noses, kissing, etc., practised in all parts of the world. The February number will also contain the conclusion of Dr. Andrew D. White's paper, "From Babel to Comparative Philology," and that of Professor Huxley's discussion of the Aryan question and prehistoric man.

— In *Science* for Dec. 26, 1890, p. 361, second column, seventh line from the bottom, "3,810" should read "5,810."